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UP THE ORINOCO TO THE LAND OF THE MAQUIRITARES

By LEO E. MILLER

It seemed as if the declining sun had set the quivering world afame; all day long the *Delta*, well remembered but unbeloved by voyagers on the Master River, had struggled on against the yellow flood toward her goal two hundred and forty miles above the Gulf of Paria. Not a ripple stirred the placid water, which seemed like molten glass; and no breeze stirred the heavy, dark vegetation that lined the river's bank. It had been one of those days which only the traveler to tropical lands can adequately picture; when all the earth silently droops in an unrelenting heat and glare and eagerly awaits the coming of night, which alone can bring relief.

As the sun dipped into the forest, and only a faint pink and violet glow lit up the banks of vapors hanging low in the west, the night wind from the ocean sprang up; soon a choppy sea was raging, and, as each white-capped wave struck her wooden sides with a muffled boom, the fragile, top-heavy steamer shuddered and threatened to capsize. Morning, however, found her still intact, and, not long after, we reached the high sandy bank on which stands Ciudad Bolivar.

The first white man to ascend the Orinoco was Ordaz, who in 1531-32 went as far as the mouth of the Meta; and after him came the usual bands of treasure seekers in quest of El Dorado, but instead of wonderful golden cities they found yawning graves in a hostile wilderness. Before the middle of the eighteenth century the Jesuit fathers founded missions as far as Esmeralda; these have long since vanished. In 1800 Humboldt made his memorable voyage to the Cassiquiare, and a number of other scientific expeditions followed in his wake at irregular intervals. For all the work of the explorers both early and late it is remarkable that even to this day the actual sources of the Orinoco have not been discovered.

To trace this huge artery to its very beginning, supposedly somewhere in the Serrania de Parima on the Brazilian frontier, was not the object of our expedition. Accompanied by Mr. Francis X. Iglseeder of New York, and under the direction of the American Museum of Natural History, I started in the fall of 1912 on a zoölogical reconnaissance to the regions north of the inaccurately mapped Rio Cunucunuma, more particularly Mount Duida, thought by many to be the locality described in a widely read book entitled "The Lost World." Of this country, the people, and the animal life inhabiting its virgin wilds, very little was known.

With the tying-up of the *Delta* the first stage of our journey had been completed.

Ciudad Bolivar, formerly called Angostura, meaning "narrows," on account of the narrowing of the Orinoco at this point to the width of half

a mile, stands on an eminence on the right bank and is the capital of the department of Guiana; it is the largest and the only city of importance on the river. The red-tiled roofs and white-washed walls of the houses can be seen from afar. On landing, one is confronted by a strange medley of low, thick-walled edifices, narrow, crooked streets, and swarthy, unkempt people. Practically all of the windows are heavily barred, a custom common

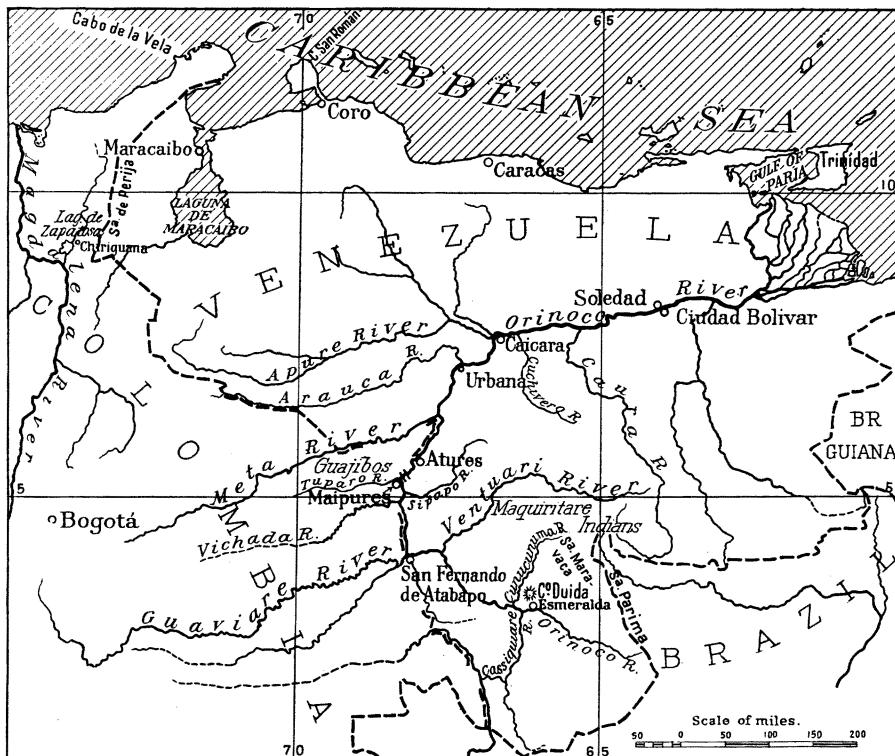


FIG. 1—Sketch-map of the Orinoco River region, showing the location of the geographical features mentioned in the text. Scale, 1:13,700,000.

in many parts of South America, and retained from the time of the Moors in Spain.

Whatever beauty attaches to the place is indoors. There are no green lawns or flower gardens to cheer the eye of the passer-by; but a glimpse behind the somber walls will invariably reveal an open court, or patio, containing flowers and tropical shrubbery and occasionally a fountain; but this is not all. In the patio of the hotel which served as our headquarters there lived in perfect harmony several large tortoises, a deer, two sheep, about a dozen tree ducks, turkeys, chickens, guineafowl, and several pigs; while fifteen species of birds, including parrots, orioles, and finches, occupied cages hanging on the walls. The desire to keep caged animals is an inherent

trait of the South American. Back of the city lies an extensive swamp from which, at least during the month of December, came great numbers of mosquitoes. As may be inferred, the heat was very great; but regularly at nightfall a strong wind comes up the river, causing a drop of several degrees in the temperature; then the town casts off its torpor, lights twinkle, the band plays on the waterfront, gaily dressed and painted women peer from behind the heavily barred windows, the streets are filled with a roving crowd of men and boys, and Ciudad Bolivar presents a wide-awake appearance.

On the opposite side of the Orinoco is the small town of Soledad; this village supplies a large portion of the sailors who man the boats plying on the river.

Our first care was to try to find a way of proceeding on our voyage. On account of the low stage of the water between January and March, steamers do not ascend beyond Ciudad Bolivar regularly and at best they go only as far as the Apure. It was therefore decided to charter a sailboat of shallow draft which would take us to the first great barrier to navigation, the cataracts of Atures. To secure such a craft was not an easy matter. We visited several of the large export houses, mostly German, but none of them had vessels at their disposal. Finally, we heard of a man named Guillermo Montez. He was a type frequently met with in South America. Owning a small store which contained chiefly long ropes of garlic festooned on the walls, living in a mud hovel, and apparently poverty-stricken, he nevertheless possessed great wealth and knew how to handle his fellow-countrymen. This "handling" consisted of keeping them constantly in debt to himself so that he owned them virtually body and soul. Montez immediately sent to Soledad for one of his debtors, and within a short time we had completed the contract for the transportation needed.

On December 16 word reached us that the boat was ready. We had spent the intervening days adding to the stock of provisions brought from New York, and it might be added that the shops of Ciudad Bolivar are well filled with a splendid assortment of foodstuffs at reasonable prices.

The *Hilo de Oro* (Thread of Gold), for that was the name of the sloop impatiently bobbing near the bank, was a boat capable of carrying one hundred and fifty *quintales* and was under the command of one Pedro Solano; her crew consisted of four men and the captain's wife, whose position was that of cook. Properly to load the equipment and provisions required half a day, and, with the springing up of the evening wind, we hoisted sail and, skirting the towering rocks protruding from the center of the river, glided easily to the other side. As all the men came from Soledad, there followed a night of the usual festivities of drinking and leave-taking; but with the rising sun, the wind still holding out, we actually started on our voyage up the great river.

Fortunately the wind was favorable and continued to blow intermit-

tently all day long; by ten o'clock at night we had covered about thirty miles and cast anchor at a point called Boca la Brea. The width of the river averaged about one mile and half, and the entire bed is strewn with huge boulders, rendering navigation at night impossible.

Next day a favorable wind did not reach us until late in the morning, and we had our first glimpse of wild life. The crew, a piratical-appearing band with unshaven faces, wearing short breeches only, and red and blue handkerchiefs around their heads, landed a number of large striped catfish; but their tackle was too light, and others of greater weight broke the lines and escaped. Numbers of *caimans*, or crocodiles, floated lazily down stream with only the eyes and sawlike tails showing above the water; and a school of freshwater porpoises jumped and raced around the boat.

On the days that followed the wind either died down entirely or blew with terrific violence, so that slow progress was made. The *chubascos*, or squalls, not uncommon on tropical rivers, appear suddenly and without warning; a faint, funnel-shaped mass appears on the horizon, followed by a low bank of black clouds, and fitful little sand-spouts spring into existence on the vast *playas*. There is never time to seek the leeward bank, and not a minute is lost in lowering sails and placing every available object below to prevent its being washed overboard. While Captain Solano shouted hoarse orders and the crew worked like mad (the only time they really did work), we donned our oilskins and awaited the coming of the storm. To go down into the hatch was impossible, both on account of the lack of space and the stifling heat. The wait was never very long. With a roar the hurricane burst upon the quiet river, and in a few minutes everything was obliterated in the dense fog and wall of falling water. The wind tore through the rigging with agonized wails, and angry white-capped waves sprang suddenly into existence, sweeping over the boat and dashing it about like a cork in a mill-race. There is nothing to be done but wait until the storm subsides and hope that no obstructing boulder, or the bank, will put an end to the madly careening craft in the semi-darkness. This may last from fifteen minutes to an hour; then the wind dies down, the rain ceases, and the fog lifts. A changed river presents itself. Huge waves, capped with foam, dash and tear at the high crumbling banks, undermining them so that large sections tumble into the water, carrying with them tall trees and massed vegetation. The agitated surface is littered with débris, which bears good evidence of the violence of the storm.

After this there followed several days of calm; there was not enough wind to fill the sails, and all the "whistling for a breeze" of the sailors did exactly as much good as one would expect it to. Finally, in desperation, a long rope was tied to the mast, and two men, going ahead in a canoe, made the other end fast to a tree, a few hundred feet ahead. The remaining members of the crew then hauled on the rope, slowly drawing the boat forward. Progress was slow, of course, but on December 22 we reached the

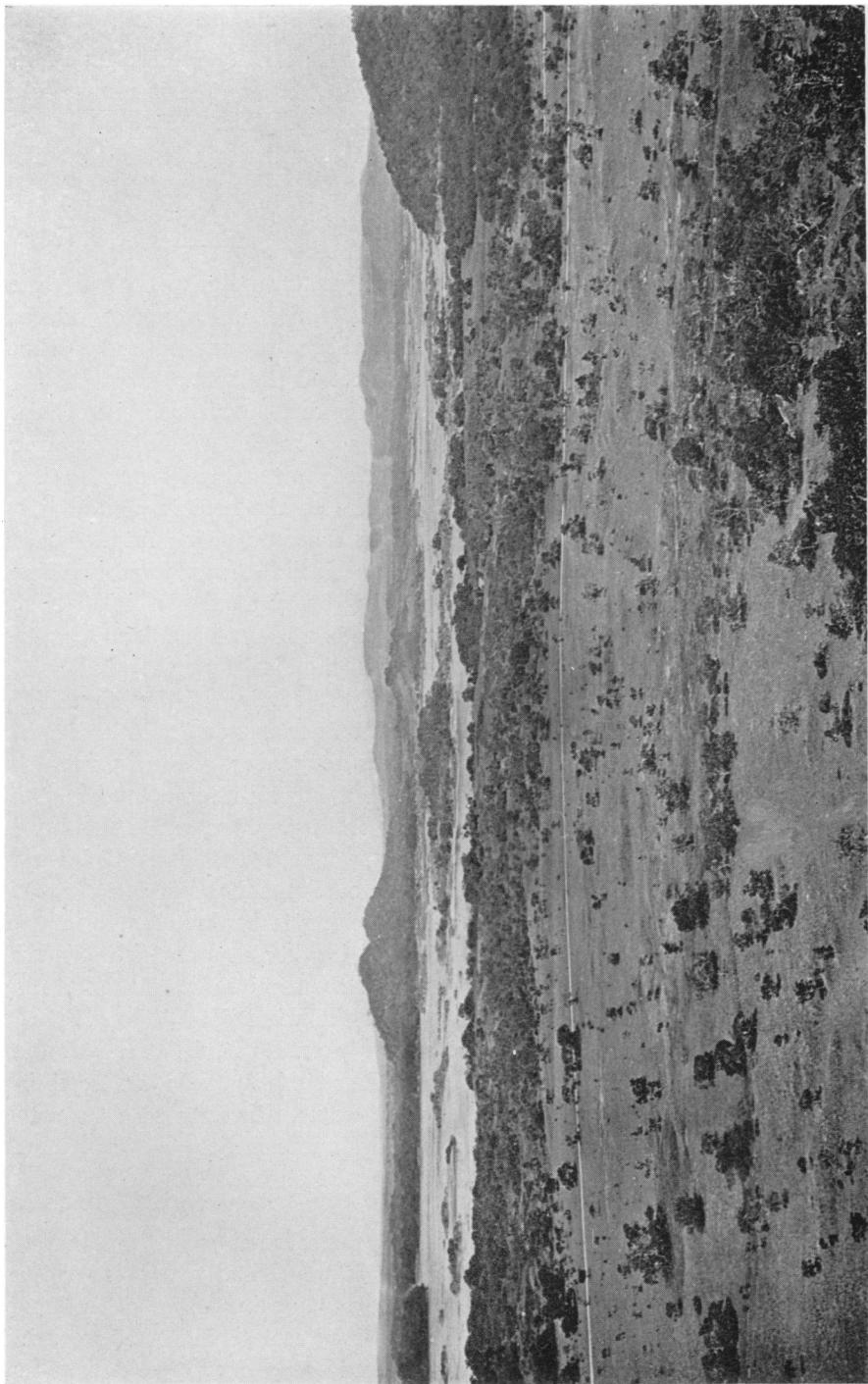


FIG. 2—Atures Rapids on the middle Orinoco. Note the savanna vegetation. The white streak running across the foreground is the portage road around the rapids.
(Figs. 2-10 are from photographs by Leo E. Miller.)

Puerta del Infierno, the best possible name for the narrow, rocky gorge through which the river rushes with uncontrolled fury. A large mass of granite covered with low vegetation divides the river into two narrow channels, one of them so protected by high, rocky banks that no wind ever reaches the water and it consequently becomes impossible for boats to sail up the passage. The other is a narrow, rock-strewn gorge down which the water thunders in a series of cascades. On the right bank, perched high on the rocks, are a few mud huts called Pueblo de las Piedras. We spent the greater part of a day waiting for wind and then made straight for the seething passage. Fortunately our pilot was a good one; his method was to steer directly for some great boulder, below which the water was quiet, and, just as the ship seemed about to strike, he swung the tiller, and the boat painfully nosed her way up the cataract that dashed down the sides of the rock. If the breeze slackened for a moment, the ship drifted back with the strong current, which was extremely dangerous, as there was no way of regulating her course; but always, just in the nick of time, the sails filled, and after an hour's struggle we left the rapids and sailed into the quiet water above.

Not far above the Infierno is the village of Mapire, a neat collection of perhaps fifty huts on a high bluff overlooking the river. Back of the town are vast *llanos*, or grassy plains, which are capable of supporting numerous herds of cattle. On the opposite side of the river, and some little distance up, is the mouth of the Caura, at one time believed to be the home of a tribe of headless people; but the old superstition has been overthrown, and during the first month of each year many adventurous parties ascend the river for a considerable distance in search of the *serrapia*, or tonka-bean. The tree (*Dipteryx odorata*) upon which the fruit grows resembles a mango, with spreading branches and deep, dense leaves. The fruit is also very similar to the mango, of a greenish color, with tough, fibrous flesh and a large seed. While the fruit is still unripe great quantities of it are destroyed by macaws and parrots, which take a bite or two, then drop the rest on the ground. When ripe, the fruit falls, and it is then gathered into heaps and dried; the seeds are later cracked open and the strong-smelling kernel is extracted, to be carefully preserved and sent to Ciudad Bolivar, where it is treated in casks of rum and then exported. It is used in making perfumes and for flavoring extracts.

The water of the Caura is of a clear, dark red color, and, for a great distance after entering the Orinoco, the two waters flow side by side without mingling to a perceptible degree.

The Orinoco widens into a majestic stream above this point, and we estimated that the distance from bank to bank must in some places be from three to five miles; also, vast sandbanks stretch along both sides for a distance of many miles.

Some hundred miles farther up stream lies Caicara, the only town of

importance on the Orinoco beside Ciudad Bolivar. At the time of our visit it consisted of about one hundred and fifty houses; but on account of a rubber and *serrapia* boom on the Cuchivero, many of the inhabitants were leaving for the latter place. The next day we passed the mouth of the Apure and, just beyond, the mouth of the Arichuma; a great low, sandy island rises out of the center of the Orinoco at this point, on which thousands of terns, skimmers, gulls, and other water-fowl were apparently nesting. All day long, and even at night, the air was filled with darting, screaming birds that made such a terrific din that it was impossible to sleep. High waves prevented our landing on the island, but the natives visit it regularly, taking away cargoes of eggs; for this reason the island has been named Playa de Manteca.

The next settlement is called Urbana, on the south bank of the river almost opposite the mouth of the Arauca. It consists of about a score of hovels. The Arauca is a river of considerable size and is said to be bordered by vast marshes and swamps, the home of countless egrets and other water birds. Hunting parties ascend during the nesting season and kill great numbers of the birds; the plumes are taken to Ciudad Bolivar and sold to exporters.

Leaving Urbana on December 29, we entered one of the most difficult stretches of the river to navigate. The fish-hook bend of the Orinoco turns southward, and the eastern bank is dotted with a range of low, granite hills which are in fact a chain of giant, blackened, dome-shaped boulders. The wind from the east, roaring through each cleft and opening, strikes the river from several directions and with the violence of a hurricane. One moment there is scarcely wind enough to make headway against the current; the next, a gust strikes the sails and sends the ship wallowing on her beam until the boom drags in the water and it is an even bet if she will gradually right herself or go over. At such times of peril, as well as on starting each morning, it is the custom of the sailors to pray. Of course they are all Catholics. The captain, or whoever steers, says: "*Vamos con Dios*" (let us go with God), and the others answer in chorus "*Y con la Virgen*" (and with the Virgin). Occasionally the person whose duty it is to lead is so occupied in rolling a cigarette or slapping at flies that he neglects his duty; then someone is sure to remind him with a sarcastic "*Aha! Hoy vamos como los Protestantes*" (Aha! today we are starting like the Protestants). It often happens that the crew is remiss. The captain will repeat his lead several times without being heard; finally, his patience exhausted, he shouts at the top of his voice "*Vamos con Dios, caramba!*" and the crew immediately yell back at the top of their voices "*Y con la Virgen, caramba!*"

Added to the danger of shifting gales is a rapid named San Jorge. There was just enough water to cover the rocks which obstruct the river bed, causing a series of cross currents and whirlpools which only a Venezuelan boatman, trusting mainly to luck, can hope to pass through. The rigging

of the *Hilo de Oro* was old and rotten, and ropes were constantly snapping and sails splitting. No matter how obvious a defect might be, it was never remedied until an accident had occurred. The boom had been threatening to break as each sudden gust of wind struck the mainsail, but a few boards nailed across the weakened place, it was hoped, would give sufficient strength for any emergency. An hour after leaving San Jorge, however, the boom parted with a loud report and dropped into the water, nearly upsetting the boat. Then, while the craft wallowed on her side with the deck awash, there ensued a good deal of mingled praying, swearing, and frantic work until the heavy boom was fished out of the water. We tied up at the bank, cut down a tree, and worked the greater part of the night replacing the broken spar.

One of the curious granite battlements rears its head out of the water to a height of several hundred feet and, though smaller in size, in form is somewhat suggestive of the famous Sugar-loaf Rock at the entrance to the harbor of Rio de Janeiro. This is called Treasure Rock, and no Venezuelan ever passes the spot without casting envious glances at the top. In the days when the old Spaniards were still wandering over the newly discovered lands in search of El Dorado, so the story goes, they penetrated far into the Cerro de Sipapo and found rich treasures in gold and precious stones. The Guajibo Indians, in whose domain they had penetrated and whom they had robbed, finally tired of their unwelcome guests and chased them down the river. In desperation, the Spaniards formed a stronghold on this island rock, driving iron spikes into its sides as a means of reaching the top. For many, many weeks they resisted a siege by the savage hordes, but with the coming of the rainy season the Indians withdrew to their mountain fastness. Finally the Spaniards came down, cutting off the spikes as they descended. They feared pursuit, and so left the treasure on the rock, hoping to come for it when reinforcements had been secured; they never returned, and to this day the fabulous wealth of the Guajibos lies untouched on the top of the impregnable boulder.

The Meta is a mighty river, coming from the immense prairie region of eastern Colombia. It is navigable for the greater part of its course and should be the means of opening up illimitable grazing areas when the Orinoco is thrown open to free navigation. Where the Meta joins the Orinoco the latter is fully two miles wide; near its mouth the country is covered with a dense scrub growth. As we neared the mouth of the great river several large canoes filled with Indians, of the Guajibo tribe, shot from an invisible hiding-place near the bank and made for the center of the stream. They have an unsavory reputation, and Captain Solano added little gaiety to the occasion when he prophesied an attack and armed his men. On they came, swiftly and silently, the dusky, naked bodies bending in perfect unison, and the great muscles of the arms and shoulders glistening in the sunlight as they drove the short, pointed paddles deep into

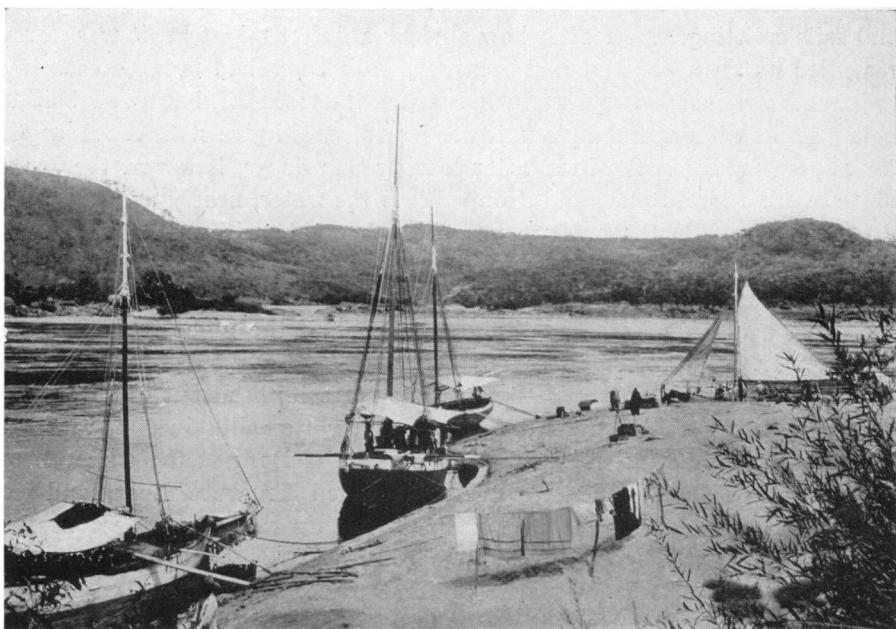


FIG. 3.



FIG. 4.

FIG. 3—The "port" of Vagre on the middle Orinoco.

FIG. 4—The end of the portage around the Guajibo Rapids on the middle Orinoco. These are the most dangerous rapids of the whole river.



FIG. 5.

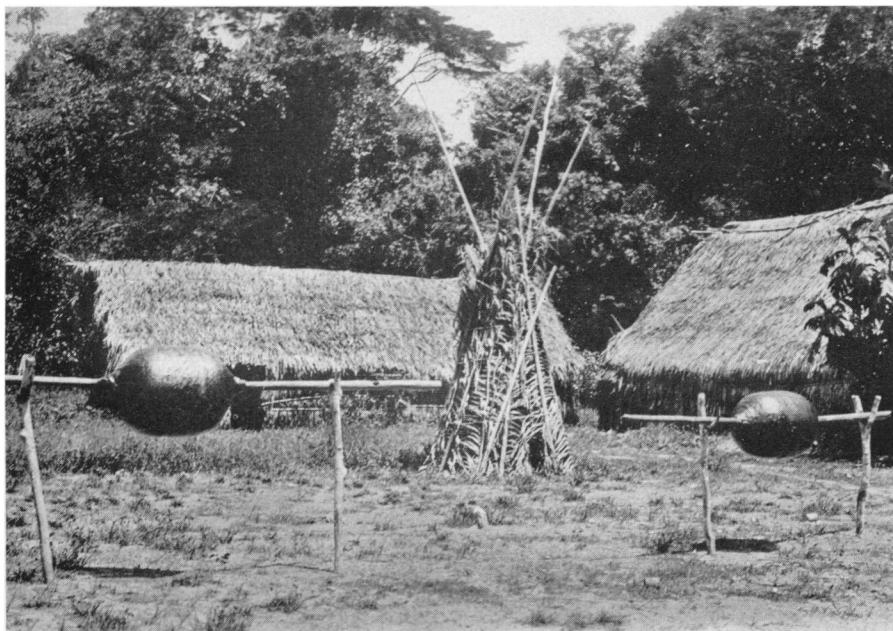


FIG. 6.

FIG. 5—Granite outlier of the Guiana Highlands near Caicara on the Orinoco.
FIG. 6—Tropical rubber collector's camp on the middle Orinoco.

the water with vigorous strokes; but our suspicions proved to be unfounded. They passed rapidly on some secret mission of their own without even condescending to glance in our direction. This utter indifference to strangers, I found later, is a characteristic common to all Indians of the upper Orinoco. A man might be drowning or stranded on a rock, but they would pass him quietly in their canoes without apparently seeing him; they would pay not the slightest attention to his cries for help. Their ill-treatment at the hands of strangers has been so great that they have lost all confidence in anyone unknown to them; and so they retaliate by feigning indifference to him, even in his direst need.

The nights were usually spent aboard ship. If there was no wind it was safe to tie up to some tree; or if darkness overtook us near a *playa* the anchor was carried ashore and buried in the sand. While the cook prepared supper on the brazier, or over a fire built on the bank, hammocks were strung in the rigging, and then we fished until time to retire.

Fish were always abundant and of many varieties. One kind that was taken frequently and that was excellent eating was a catfish, weighing up to twenty-eight pounds, of a deep brownish color, with wavy bluish gray lines running along its sides, called *vagre tigre*. Another species of catfish, frequently of a weight of seventy-five pounds or more and of a deep slate color, was not uncommon. There was also a third kind, about eighteen inches long, with a large, narrow head and "feelers" as long as the body; it was always sure to be among the catch. But neither of the two last-named was ever eaten, as the flesh was said to be poisonous. The crew was always careful to clean all fish immediately and place them under cover; if left exposed to the moonlight over night they were unfit for food.

The hoarse cough of jaguars was heard almost nightly; it was the season when great numbers of turtles left the river at nightfall to deposit their eggs in the sandbanks, and the jaguars left the forest at dark to dig up and feed on these eggs. One night, just as the boat had drawn up to the high, sandy bank preparatory to tying up, one of the huge cats was discovered sitting ten feet above us quietly surveying the scene on deck. There was a rush for the guns, but when they were secured the jaguar had disappeared. A clear sweep of loose sand with a low bush here and there stretched back a mile from the river to the heavy forest, and in the brilliant moonlight it was easy to trace the animal's tracks as it started toward cover. Several times its shadowy form was visible, slinking from one bush to another a few rods away, but always out of range; after half an hour the tracks were lost in the edge of the forest. We returned to the ship. Before replacing the guns in the hatch, one of the men casually broke his, which action led to the discovery that it contained no shells; neither were the others loaded. One of the men while cleaning them that afternoon had removed the cartridges and failed to reload them. Fortu-

nately the jaguar is not quite as savage as he is usually pictured, or there might have been a lively scene on the *playa*.

There is but one other rapid of importance in the Orinoco before the cataracts of Atures are reached, and that is San Borja, not far above the mouth of the Meta. Just above this narrow stretch of seething water we met another boat about the size of the *Hilo de Oro*, which was cruising back and forth near the bank, her crew directing loud shouts into the forest at frequent intervals. Upon inquiry, we found that one of the crew had gone into the woods to cut a pole; the other members of the crew had heard him chopping, as he had not entered the matted vegetation more than fifty feet; suddenly the chopping ceased, but the man did not come out; although they had searched far and near no trace of him had been found, and this was the fourth day after his disappearance. The supposition was that he had been killed and carried away by Indians.

Perico was formerly the port of call for sailing craft below Atures. At the time of our arrival there was nothing whatever there, not even a single hut. We continued up the river half a mile to a place called Vagre; here we found the remains of two palm-leaf huts, long since fallen down and overgrown with vegetation. In the small clearing a few cotton stalks, beans, pawpaws, and castor-bean bushes still struggled for existence with the invading hosts of creepers and second-growth sprouts; the forest was rapidly reclaiming its own. On the sandy riverbank were the tracks of jaguars and caimans. At this point the river is divided by islands into a number of branches, and the one on which Vagre was situated is not over five hundred feet wide. Beyond this point a boat of any size cannot proceed; it is the foot of the series of cataracts, six miles long, known as the Rapids of Atures. We sent a man overland to Zamuro for a *falca*, which is a canoe with the sides heightened with boards; and, while our luggage was being rowed up the swift stream, we walked near the bank.

The aneroid, read at water-level, gave an elevation of two hundred feet; perhaps this is somewhat too low. Between Vagre and Zamuro a row of rounded, black rocks rise to a height of two hundred and fifty feet above the river on the eastern side. Many boulders of enormous proportions lie sprinkled about in the most irregular manner, as far as we could see, and in spots there are outcroppings of ledges of quartz. The tops of the rounded granite hills are hard and glazed, so that they glisten in the sunlight as if covered with a coating of ice. There are but a few stunted trees, and, where any vegetation can get a foothold, tough, wiry grass grows; this is the home of many rabbits and rattlesnakes.

Zamuro we found to consist of three grass huts newly built and occupied by sick, miserable Venezuelan families. The heat is terrific, and mosquitoes and sandflies first begin to make their presence known in considerable numbers. The river scenery is really magnificent; huge boulders of fantastic shape strew the river bed and rear their heads high above the



FIG. 7.



FIG. 8.

FIG. 7—Vegetation in a tropical lagoon.

FIG. 8—The town of Atures on the middle Orinoco.



FIG. 9.



FIG. 10.

FIG. 9—The Orinoco above Atures Rapids. Note the savanna vegetation.

FIG. 10—Maipures settlement on the middle Orinoco, showing a clump of *serrapia* trees.

seething torrent; against them the water dashes ceaselessly, surging and swirling in a mad endeavor to destroy them, only to be baffled by the immovable sentinels and hurled back again to dash against their brethren, equally unrelenting and equally impervious to the roaring onslaught. The scene is awe-inspiring.

The next step was to secure ox-carts to carry the impedimenta to the Rio Catañapo, three miles away, and this we crossed in a canoe landing practically at Atures. The Governor of the Upper Orinoco, General Roberto Pulido, made Catañapo his home. He was ordinarily supposed to reside in San Fernando de Atabapo, but on account of his arbitrary methods of government he was so greatly disliked that he decided it was "healthier" to live elsewhere.

The Catañapo is a turbulent stream of clear, cold water that dashes down from the nearby Cerro Sipapo. Not far above its mouth is a good-sized village of the Piaroas, who came down occasionally with plantains, *papayas*, and other fruits, which they exchanged for cloth and sugar at Atures. When the Indians come down they apparently bring with them numbers of freshly killed monkeys, whose flesh is greatly esteemed as food. We saw several heaps of the charred bones near frequently used camping sites, here as well as at Zamuro.

The Catañapo abounds in fish; its water is so clear that they may be seen twenty-five feet or more beneath the surface. Some were fully two feet long and resembled giant black bass; they refused to be tempted with meat bait, but rushed greedily for bright-colored objects such as fruit and flowers; they would take half an orange at a gulp.

Atures, consisting of six or eight mud and grass huts, owes its existence to the fact that the Governor lives on the Catañapo and all the residents are his employes. Formerly the town was larger and there were thirty ox-carts plying back and forth across the portage; but the Governor promptly selected the few he wanted and then discouraged competition in such a manner that he was shortly left alone in the field. To us he was most cordial and immediately placed his carts at our disposal. He did not examine our luggage or perform the self-imposed duty of extracting from it anything that suited his fancy.

The two miles from Atures to Salvajito, the port of embarkation above Atures Rapids, were covered in ox-carts which lumbered slowly along over the uneven semi-arid country. Salvajito was only a small cleared space in the forest fringing the river.

The next step of the journey was to traverse the forty miles of river between Atures and the second great cataract at Maipures. Only a small canoe was available; and so, leaving my assistant and a number of the men to guard the left-over luggage, I started with three paddlers. The canoe was only eighteen feet long, with about two inches of freeboard, but fortune favored us, and after two days we reached the mouth of the Tuparo. The

first night out had been spent on a *laja*, or shelf of rock which extends into the river; the men set fire to the dry vegetation back of the camp in order to keep away jaguars and built a fence of brands along the outer edge of the rock to frighten off the crocodiles. The second night was spent on a large sandbank just below the rapid of Guajibo. In approaching this site the canoe had been caught in a sudden hurricane and swamped before land could be reached; but fortunately we had gained shallow water, so that nothing was lost. On this sandbar lived three species of terns, one of very small size that came in immense flocks after nightfall and, dropping on the sand, immediately disappeared from view; also numbers of yellow-legs and a few gulls. The wind blew steadily all night, so that by morning everything and everyone was half buried in the loose sand.

The rapid of Guajibo is one of the most treacherous in the whole Orinoco. Each year the rubber-gatherers pay heavy toll in lives while traversing this notorious spot. A great horseshoe-shaped ledge of rock extends across practically the entire river, and over this the water rushes at great speed; below is a series of scattered rocks extending for a quarter of a mile, forming a raging, roaring gorge. We portaged around the spot, although the country is very difficult, owing to the many high rocks and the deep crevices between them. An acquaintance who had just passed attempted to have his men drag their boat through, with the result that they lost the canoe and three men. Shortly after, a large *piragua* coming from up river attempted to run the rapids to save time; seven of the crew, as well as the owner of the outfit, paid for their folly with their lives, and the entire cargo of rubber together with the boat was lost. A few days later, another party wrecked their canoe and lost two men. These are all cases which came under our notice, and I was told of many others.

The port of Maipures is on the Rio Tuparo, about half a mile above its mouth. This river, some two hundred yards wide, comes rushing out of the interior of Colombia down a rocky river bed. When the landing was effected we found only the parched plain, a trail leading away from the river to the settlement of Maipures, a good three miles away. We pitched camp near the water, and the canoe and two men were immediately sent back for another load of our equipment. There was not much life along this part of the river. Numerous iguanas spent the hot hours burrowing in the sand, and if disturbed either ran away in the brush or plunged into the water. Both green and blue kingfishers clattered noisily on the opposite side, and a few large gray herons flapped up and down over the center of the stream. We could constantly hear the loud roar of the Maipures Rapids, and the water rushing down the course of the main river was covered with foam.

Five days after our arrival the second load, in charge of Mr. Iglseder, arrived. They had met with a mishap in the rapid of Guajibo, and one man and the canoe were lost. For nearly two days they had been stranded

on an island and besieged by a party of Indians from the Sipapo; the occupants of a passing canoe, seeing their plight, came to the rescue, and brought them on to the Tuparo. While the borrowed canoe returned for the remaining members of the party, we busied ourselves transferring camp to Maipures, above the head of the rapids. The intervening country is level and covered with a sparse growth of wiry grass and patches of low woods; near the watercourse the trees are taller and the vegetation more dense. The town, consisting of six adobe houses with thatched roofs, nestles in a little grove of mango and tonka-bean trees, and from a short distance away is very picturesque; but, like all the rest of the plain, it is insufferably hot, and the myriads of sandflies quivering like heat waves in the air make life almost unbearable.

While waiting for a boat of ample size to take us up the river to San Fernando de Atabapo, we had time to explore the surrounding country and to visit the rapids, three in number, which obstruct the river. The woods are wonderful beyond description; most of the trees are gnarled and low, as if grown under the guiding hand of a skillful Japanese gardener, and have the appearance of being hundreds of years old. Stunted spiny palms rear their crowns here and there, and an occasional tangle of red-flowered creepers forms an umbrella-like mass on the tip of a slender, dead stub. The ground is sprinkled with rocks of fantastic shapes, and some are of enormous size, which rise in needle-like, fluted columns or like crumbling tiers of massive walls amid the curiously distorted vegetation. Along the river are other masses of rock, but of an entirely different formation; there are caves and grottoes, and ledges honeycombed with hundreds of pot-holes exposed by the low water.

Beyond the woods are extensive areas of cacti, pineapples, and low thorny bushes, springing from crevices in the granite ledges. Bird-life is abundant and varied. Quail and red-breasted meadowlarks occupy the open country, as well as a species of the much-sought *tinamou*; but a bird that proved to be the most interesting was a small, obscure individual called nunlet, or swallow-wing. All day long the little creature, about the size of a kingbird, black above and gray below, with a saffron band across the throat, sits on the top of some dead tree, seemingly asleep; but let a fly or insect of almost any kind pass along and the bird immediately becomes charged with activity and darts into the air in hot pursuit, catches its victim and returns to its perch with graceful flits of the wings. It remains on the same twigs for hours, and usually returns day after day. If a stick is thrown at it the little creature flies away and comes back again and again. But, stupid as the bird appears to be, it is nevertheless a skillful architect. I have seen it dig perfectly round holes deep into a bank of sand so loose that the whole mass would crumble at my touch; while one bird digs with much scratching and working of wings, the mate sits on a branch near by and gives a twitter of alarm upon the approach of danger. Some

members of the family build a huge pile of twigs on the entrance to their burrow to hide it; at the end of the tunnel, a foot or two back, the snow-white eggs are laid upon a thin layer of straw and feathers.

The highest falls in the river are known as Carretia and are supposed to be about thirty feet high; they block the eastern channel of the river, here divided into two branches by the immense Isla de Raton. In the western arm the Raudal del Conejo and the Raudal Saltinero effectively block this watercourse to navigation. It is said that the Spaniards built a road from Atures to the foot of the Cerro Sipapo above the falls of Carretia, and that the Indians still follow this route occasionally. If true, this was doubtless a great convenience, as it did away with the necessity of navigating some fifty-odd miles of the most difficult and dangerous waterway of the entire river.

A large boat called *piragua* was obtained, and in this the expedition traveled to San Fernando de Atabapo in six days' time. The river is dotted with a number of islands, the largest being the Isla de Raton, all heavily forested; the current is frequently so strong that no headway could be made either by rowing or poling the heavy boat. At such times a thick cable of the braided fiber of a palm called *chiquechique* had to be requisitioned, and everybody walked on the bank dragging the boat slowly along. The very first day the man in the lead ran into a bush-master fully eight feet long and narrowly escaped the vicious thrust of the deadly reptile. A charge of shot soon put an end to the creature's menacing career, but the men jumped into the boat and did not want us to take along the dead snake, as they said its mate would be sure to follow and inflict a terrible revenge for the loss of its companion. This kind of superstition is very common among the natives on the Orinoco; few of them would dare shoot a jaguar, as they firmly believe that for every one slain a member of their own family would be carried away by one of the huge spotted cats.

The country on the Colombian side, from below Atures onward, is level llano, covered with a good growth of grass, and having an abundance of water. Some day, no doubt, and that in the near future, numerous herds of cattle will graze in the rich pasturage awaiting them, and another source will be added to the world's limited supply of meat.¹ A fringe of trees grows along the river; among them are the valuable *cachicamo* and *cedro*, the trunks of which are frequently fashioned into canoes by the natives.

The Vichada, at this season, had dwindled down until at its mouth it was not more than a hundred yards wide. We could see a range of hills far to the west, dimly outlined against the sky and finally fading into obscurity in the haze; in this direction the river has its origin. Several Piaroa families had settled near the junction of the two rivers and built a large hut of palm leaves and grass. The men lounged in their hammocks

¹ On this topic see "The Cattle Industry of the Llanos," by Walter Lefferts, *Bull. Amer. Geogr. Soc.*, Vol. 45, 1913, pp. 180-187.—EDIT. NOTE.

all day long, drinking rum and fighting the clouds of sandflies which feasted on their half-naked bodies; at night they crossed to one of the numerous sandbanks and collected basketfuls of turtle eggs and also as many turtles as their canoes would hold. Some of their canoes were mere shells, so small that we could never learn how to handle them; no matter how quietly we sat they upset as soon as pushed out into the current, but an Indian or even two would calmly squat down in the bottom, take up their paddles, and glide away without the least concern.

The women were making cassava bread. After the tubers (*Manihot utilissima*) are ground, and the juice has been extracted, a thin layer of the coarse meal is spread on the bottom of a shallow pan about three feet in diameter; the heat causes the particles to adhere, forming a tough, round wafer which can be turned without breaking and is thoroughly baked on both sides. When cold it hardens, and the huge slabs are then done up in bundles of twenty to forty each, wrapped in plantain leaves, and in this way kept indefinitely. This is the bread of the Orinoco and is always carried as the main article of provision by Indians and travelers alike; when needed, pieces are broken off, dipped into the river to soak a few minutes, and then eaten. While not particularly appetizing, the slightly acid flavor is not unpleasant, and if there is time to toast it just before using it is really quite palatable. Another article commonly prepared by the Piaroas is the bark of a certain tree, called *tabari*. Long, narrow strips are cut from the trees and alternately soaked in water and beaten between rocks until the thin layers separate into tissue-like sheets; these are used in rolling cigarettes.

One of the granite ledges flanking the river just above the Piaroa dwelling bears on its surface a number of curious figures, carved in the face of the rock; unfortunately the water was so low that we passed far beneath them, and I was unable to make out just what they were; but the canoe-men who had seen them a number of times said they were figures of men and date back to prehistoric times.

The country now rapidly grows wilder; tall forest replaces llanos or scattered growth, and the camps of rubber-collectors dot the river banks. One afternoon, as we poled quietly along, we came upon a huge anaconda coiled up on a sandbank; all about were iguanas three or four feet long digging nesting-burrows in the loose sand. The snake had just caught one of the big lizards and was crushing it into a limp mass, but the others paid not the slightest attention to the tragedy which was being enacted in their midst and ran about or worked but a few feet away. When we approached to within twenty feet the anaconda dropped its victim and flung itself into the water; some of the iguanas followed it, and others scampered away over the sand.

That night we reached the low sandy island of Tanaja and, ascending one of the branches of the river, made camp on the rocky mainland. The

water is sluggish and shallow, so that we could easily see the muddy bottom six or eight feet below. As the boat moved slowly along we became aware of masses of black, flitting shadows underneath, and soon made out shoals of fish of various sizes that literally covered the bottom. There were rays, electric eels, catfish, and *piranhas*, by the thousands, besides many others which we could not identify; the reason for their congregating in this shallow place is hard to guess.

The boulders on the bank were dotted with what we at first took to be lichens; but examination showed them to be nighthawks (*Chordeiles rupestris*) of a light gray color, which clung to the rounded top, silent and immovable, as if carved out of stone. When we paddled across to the island a short while after we found scores of others, but these were the females squatting on one or two fragile, speckled eggs which had been laid in shallow hollows scooped out of the warm sand. They were very tame and permitted me to walk up to within a few feet of them; then they took wing and with noiseless, graceful flaps flew a short distance away and dropped back on the sand.

Flocks of red and blue macaws flew screaming across the river in quest of some favorite tree in which to spend the night, far in the depths of the forest; after them trailed parrots of various sizes and colors, always flying two by two. Herons flapped lazily upstream, and snakebirds, perched on snags, looked down at the masses of fish below, apparently regretting their limited capacity for eating. Exciting as this naturally must be to a field naturalist, it was but a foretaste of what we were to find each day farther up the river.

As the morning of January 24 sped by, the water of the Orinoco began to assume a dark color, and by four o'clock that afternoon we had reached the mouth of the Atabapo; an hour and a half later we had ascended the clear, red water of that river for a distance of three miles and tied the *piragua* to the ledge below San Fernando.

San Fernando de Atabapo is the last settlement on the Orinoco, and was the base from which we hoped to make our way to the unexplored regions about Mount Duida. This part of the expedition will be dealt with in a subsequent article.